The Advanced Plant Habitat (APH) hardware will be a large growth volume plant habitat, capable of hosting multi-generational studies, in which environmental variables (e.g., temperature, relative humidity, carbon dioxide level, light intensity and spectral quality) can be tracked and controlled in support of whole plant physiological testing and Bio-regenerative Life Support System investigations.

**Specifications and Environmental Conditions:**
- Plant experiments up to 135 days
- Front and Top View Windows
- Porous Tubes/Solid Media contained within Removable Science Carrier Tray
- Max. Shoot Height: 45 cm
- Root Zone Height: 5 cm
- Growth Area: 1,708 cm²
- Growth Volume: 112,500 cm³

**Light Provision**
- 0-1000 μmol m⁻² s⁻¹ Photosynthetic Photon Flux (PPF) in increments of 50 (internal PPF Sensor)
- Red (630-660 nm), Blue (450±10 nm), Green (525±10 nm), Far Red (730 nm), White
- Uniformity: ±15% (15 cm below light bank, 5 cm in from wall)

**Relative Humidity (RH)**
- RH Controlled/Monitored: 50-86% (±5%)
- RH Condensate Measured and Recycled

**Carbon Dioxide (CO₂)**
- CO₂ Controlled/Monitored: 400-5000 ppm (±50 ppm)
- Internal CO₂ Sensor
- CO₂ Draw-Down Capability

**Air Quality**
- Air Flow: Controlled between 0.3-1.5 m/s
- Ethylene: Scrubbed to ≤ 25 ppb
- Air Filtration
- Air Sampling Ports

**Water Quality**
- Water and Nutrient Delivery
- Water Sampling Ports

**Temperature**
- 18-30°C (±1°C)
- Leaf Temperature Sensor

**Root and Shoot Zone**
- Root Zone Moisture Level Controlled/Monitored
- O₂ Sensors in both Shoot & Root Zone

**Points of Contact:**
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